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AI-Empowered Teaching of Senior High School English Practical Writing: A "5A+E" Mechanism and Five-Stage Pathway Design

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Abstract: Practical writing is an important component of senior high school English teaching. he English Curriculum Standards for Senior High School (2017 edition, 2020 revision) requires students to select appropriate language forms according to the identity of the communicative partner, he occasion and the degree of formality, o as to achieve effective cross-cultural communication. owever, urrent practical writing teaching in Grade 10 still suffers from mechanical format training, eak reader awareness, nappropriate register control, nd single and delayed feedback. Although generative artificial intelligence offers new possibilities for writing instruction, existing studies have focused mainly on automated essay scoring, academic writing at the tertiary level, or continuation writing tasks, and few have systematically constructed an AI-empowered mechanism and teaching pathway for senior high school practical writing from the perspective of the integration of teaching, learning and assessment. Adopting a conceptual construction and lesson design orientation, and grounded in the cognitive process theory of writing,t he technology-enhanced language learning framework, self-efficacy theory and formative assessment theory, this study proposes a "5A+E" empowerment mechanism model, comprising Analysis, Activation, Assistance, Assessment, Adaptation, and Ethics. On this basis, a five-stage teaching pathway—context trigger, element deconstruction, AI co-writing, multi-dimensional evaluation, and reflective transfer—is designed, and a lesson on the invitation letter for the "Chinese Culture Festival" is presented. The study argues that AI can serve as a reader analyst, format validator, point generator, register regulator and evaluation embedder, moving practical writing instruction from template drilling toward authentic communication. As a theoretical construction and lesson design study, this paper has not yet been empirically tested; future action research or quasi-experimental studies are needed to validate and refine the model and pathway.

Keywords: Generative Artificial Intelligence; Senior High School English Teaching; Practical Writing; 5A+E Model; Integration of Teaching; Learning and Assessment

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1. Introduction

The cultivation of practical writing competence is an important goal of senior high school English teaching. The English Curriculum Standards for Senior High School (2017 edition, 2020 revision) requires students to select appropriate language

forms in written communication according to the identity of the communicative partner, the occasion and the degree of formality, so as to achieve effective cross-cultural communication. In the compulsory curriculum, students are expected to master the basic formats, structures and linguistic features of common practical genres in daily life. Practical writing is therefore not merely an examination skill, but a genuine capacity for social communication [1].

In regular Grade 10 English classrooms, however, practical writing instruction still faces four persistent difficulties. First, format training is mechanical. Students can often recite fixed frames such as "Dear…" and "Yours sincerely," but are at a loss when the genre changes, because they have not understood the communicative logic behind the format. Format is memorized as an isolated set of rules rather than as a tool serving communicative purposes. Second, reader awareness is weak. Students write with no reader in mind: the tone ignores the reader's feelings and the content departs from the reader's needs. Previous studies have pointed out that current practical writing instruction remains dominated by lexical, syntactic, stylistic and skills training, while pragmatic teaching at the discourse level is neglected [2,3]. Third, students lack register control. They find it difficult to choose appropriate language according to the degree of formality of the communicative occasion, and expressions such as "You must come" are often overly direct, failing to reflect the appropriateness required in cross-cultural communication. Fourth, feedback is single and delayed. Teachers' process guidance is often reduced to a linear sequence of in-class assignment and after-class correction; students can hardly obtain timely and precise scaffolding at critical stages such as conceptualizing, organizing and revising, and feedback concentrates mostly on linguistic errors rather than on format, content points, register and communicative effect [4,9].

Generative artificial intelligence, with its advantages in multi-modal content generation, human-like dialogic interaction and instant diagnostic feedback, offers new possibilities for escaping these difficulties[7,9]. It can generate authentic communicative situations and reader cards within seconds, turning writing tasks from paper hypotheses into real communication; it can embed format checking, register prompts and chunk recommendation throughout the writing process, enabling personalized process scaffolding; and through fine-grained rubrics and visualized feedback, it can integrate diagnostic, formative and summative assessment, making evaluation a driving force for learning and for the improvement of teaching [15].

Existing research, however, remains insufficient. Systematic reviews show that research on the educational applications of artificial intelligence has long concentrated on higher education, with limited attention to writing instruction in basic education [5,6]; applications of AI to language writing focus mainly on automated writing evaluation, academic writing at the tertiary level or continuation writing tasks, and some studies have explored the integration of AI with digital resources in junior high school written expression [10].Systematic attention to senior high school practical writing is still lacking, particularly research that constructs an AI-empowered mechanism and teaching pathway from the perspective of the integration of teaching, learning and assessment [7-9]. In other words, existing studies have not yet adequately answered two questions: by what mechanism should AI intervene in senior high school practical writing, and how can this mechanism be transformed into an operable teaching pathway? These are the questions this study addresses.

This study is a conceptual construction and lesson design study; it does not aim to test actual effects. Drawing on the curriculum standards, evaluation criteria, trial records of AI tools and teaching reflection [16,17], it constructs a "5A+E" empowerment mechanism model and a five-stage teaching pathway. The model comprises Analysis, Activation, Assistance, Assessment, Adaptation and Ethics; the pathway consists of context trigger, element deconstruction, AI co-writing, multi-dimensional evaluation and reflective transfer. A lesson on the invitation letter is used to demonstrate how the mechanism and pathway operate in the classroom.

The significance of this study lies in three aspects. First, it proposes a theoretically grounded AI empowerment mechanism that connects AI functions with the cognitive process of writing and formative assessment. Second, it provides an operable teaching pathway that frontline teachers can adapt to their own contexts. Third, through a lesson design situated in Chinese senior high school English classrooms, it engages in the international discussion on generative artificial intelligence and language education. The remainder of this paper is organized as follows: Section 2 reviews the theoretical foundations; Section 3 describes the research design; Section 4 constructs the "5A+E" mechanism model; Section 5 designs the five-stage teaching pathway; Section 6 presents the lesson design; Section 7 concludes with a discussion.

Figure 1. Research framework



Logic: problem orientation → theoretical support → mechanism construction → pathway design → lesson presentation

2. Theoretical Foundations and the Mechanism Model

This study integrates four theoretical perspectives to ground the construction of the "5A+E" mechanism model: the cognitive process theory of writing, the technology-enhanced language learning (TELL) framework, self-efficacy theory and formative assessment theory. These four theories are not isolated; together they explain why AI can support practical writing instruction and how it should be embedded in the integrated process of teaching, learning and assessment.

2.1 The Cognitive Process Theory of Writing

Hayes (1996) defines writing as a dynamic interaction system of "task environment—writer's long-term memory—writing processes", emphasizing the cyclical interplay among external task demands, internal knowledge reserves and real-time processing. Writing is not a linear sequence of "planning—translating—reviewing," but a cognitively dynamic process of continuous adjustment between the task environment and long-term memory. The task environment includes the writing task itself and external storage resources, while long-term memory encompasses topic knowledge, audience knowledge and genre knowledge [11].

This theory offers two key entry points for AI intervention in practical writing instruction. First, AI can serve as an instant regulator of the external task environment. In traditional classrooms the writing task environment is relatively static: once the prompt is given, the situation, audience and purpose are fixed, and students can hardly obtain dynamic feedback during writing.AI can generate dynamic resources such as reader cards, purpose cards, format templates and register examples according to students' immediate needs, turning the task environment from statically given to dynamically generated. Second, AI can serve as an external extension of long-term memory. Grade 10 students often have insufficient reserves of genre knowledge, register knowledge and cultural knowledge in practical writing.AI can instantly retrieve and push relevant chunks, sentence patterns and exemplars during writing, transforming declarative knowledge that originally requires long-term accumulation into immediately available procedural support.

These two functions correspond to Analysis and Assistance in the "5A+E" model. AI diagnoses students' needs before writing and provides process scaffolding during writing, keeping the writing task anchored within students' zone of proximal development (Vygotsky, 1978) [12].

2.2 The Technology-Enhanced Language Learning Framework

The technology-enhanced language learning framework (TELL) holds that the core value of technology for language acquisition lies in three mechanisms: input enhancement, output facilitation and interaction empowerment. In practical writing instruction, these three mechanisms can be systematically implemented through AI [13].

In terms of input enhancement, AI can activate students' multi-sensory channels through multi-modal discourses and graded model essays. In traditional practical writing teaching, model essays are often limited to one or two texts of a single level, making it difficult for students to perceive the gap between adequate and excellent performance.AI can generate three model essays at basic, adequate and excellent levels within seconds, automatically annotating differences in format elements, register features and reader awareness, turning implicit standards into explicit contrast. AI can also generate multi-modal materials such as pictures, audio and video scripts related to the theme, helping students build a three-dimensional perception of the communicative situation.

In terms of output facilitation, AI acts as an intelligent co-writing assistant, providing real-time chunk recommendation, format checking and register upgrading prompts, thereby lowering the threshold of written output. A common difficulty for Grade 10 students is knowing what to write but not knowing how to write it appropriately in English. AI's real-time scaffolding fills this expression gap: when a student enters ideas in Chinese, AI pushes corresponding English chunks; when a student writes "You must come," AI prompts a more appropriate alternative; when a signature block is missing, AI detects and reminds automatically. Such immediate responsive support provides students with continuous positive feedback during writing, rather than letting them wait until the teacher's correction to learn about the problems.

In terms of interaction empowerment, AI continuously enhances the effectiveness of teacher-student and peer-peer interaction through human-like dialogue and delayed follow-up questioning. In traditional writing classrooms, interaction mostly follows a one-way mode of teacher talking and students listening, and peer interaction is often reduced to simple exchange of drafts for correction.AI turns interaction from one-way transmission into multi-party negotiation: students can dialogue with AI and ask why a change is suggested; AI instantly counts high-frequency commendable expressions and disputed sentences; and teachers, based on the class error cloud map compiled by AI, identify the micro-skill targets for the next lesson.

These mechanisms correspond to Activation, Assistance and Assessment in the "5A+E" model: AI activates authentic situations, provides process scaffolding, and embeds evaluation into interaction.

2.3 Self-Efficacy Theory

Bandura (1986) points out that students' beliefs about whether they can successfully complete a writing task—that is, writing self-efficacy—directly influence the depth of their engagement and the length of their persistence in the writing process. Research shows a significant positive correlation between writing self-efficacy and writing performance [18], and students with high self-efficacy tend to adopt more active coping strategies when facing writing difficulties [14].

Grade 10 students are at a critical transition from junior to senior high school, where the genre requirements, register norms and communicative complexity of practical writing increase markedly, and students are prone to anxiety.AI can enhance students' writing self-efficacy through three paths. First, immediate positive feedback: AI can affirm appropriate expressions in real time—for example, "The use of 'I would be delighted if you could join us' here is very appropriate and shows respect for the reader"—turning vague praise into concrete, perceptible success experiences. Second, visualization of progress curves: AI can plot students' four-dimensional scores across multiple writings into growth curves, allowing students to see their progress in format standardization, content coverage, language appropriateness and communicative effect, and transforming abstract improvement in writing ability into quantifiable micro-success experiences. Third, error type cloud maps: AI can archive and visualize students' errors by type, making it clear that stubborn errors are decreasing and advanced expressions increasing, thereby triggering a positive learning cycle.

These functions correspond to Assessment and Adaptation in the "5A+E" model: AI evaluation is not an end point but a basis

for motivating learning and supporting reflection and transfer.

2.4 Formative Assessment Theory

Formative assessment theory emphasizes that the core function of evaluation is not screening and selection, but providing immediate feedback for teaching and learning so as to promote continuous improvement of the learning process (Black & Wiliam,1998). In practical writing instruction, formative assessment requires evaluation to be embedded throughout the writing process rather than occurring only after writing is completed [15].

AI intervention allows the three key links of formative assessment to be systematically implemented. For diagnostic assessment, AI can scan students' pre-test compositions before class and generate four-dimensional error cloud maps covering format, content points, register and grammar, providing teachers with a precise starting point for instruction. For formative assessment, AI can detect format completeness, content point coverage, register appropriateness and grammatical accuracy in real time during writing, and give immediate feedback through bubble prompts and color coding, turning evaluation from after-class judgment into process-driven. For summative assessment, AI can score final drafts against four-dimensional rubrics, generate radar charts and personalized improvement packages, and merge four-party data—self-assessment, peer assessment, AI scoring and teacher assessment—into learning portfolios, realizing a closed loop of learning promotion through assessment.

These links correspond to Analysis, Assessment and Adaptation in the "5A+E" model: AI connects diagnostic, formative and summative assessment into a coherent data chain that supports continuous improvement.

2.5 Synthesis: Toward the "5A+E" Model

The four theories jointly ground the "5A+E" mechanism model. The cognitive process theory of writing explains the cognitive pathway of AI intervention; the TELL framework identifies the technical anchoring points of AI; self-efficacy theory reveals the motivational mechanism through which AI stimulates learning; and formative assessment theory defines the functional positioning of AI in optimizing the evaluation ecology. On this basis, this study adds ethics as a cross-cutting dimension to ensure that AI use is transparent, controllable and responsible [16,17]. Table 1 presents the correspondence between the theoretical perspectives and the "5A+E" dimensions. This integrated framework provides the theoretical foundation for the mechanism model and the five-stage teaching pathway proposed below.

Table 1. Correspondence between theoretical perspectives and "5A+E" dimensions

Theoretical perspective	Core claim	Focus of AI empowerment	Corresponding 5A+E dimension(s)
Cognitive process theory of writing	Writing is a dynamic interaction among task environment, long-term memory and writing processes	AI as a dynamic task regulator and external memory	Analysis, Assistance
Technology-enhanced language learning framework	Input enhancement, output facilitation, interaction empowerment	AI provides multimodal input, real-time scaffolding and interactive feedback	Activation, Assistance, Assessment
Self-efficacy theory	Writing self-efficacy influences engagement and persistence	AI provides immediate positive feedback, growth curves and error visualization	Assessment, Adaptation
Formative assessment theory	Assessment should be embedded in the learning process to improve teaching and learning	AI integrates diagnostic, formative and summative assessment	Analysis, Assessment, Adaptation

3. Research Design

3.1 Research Orientation

This study is a conceptual construction and lesson design study rather than an empirical effect test. Its purpose is not to answer whether AI empowerment significantly improves students' writing performance, but to answer by what mechanism AI

should intervene in senior high school English practical writing and how this mechanism can be transformed into an operable teaching pathway. It therefore adopts a theory-driven and design-oriented orientation, providing a framework for subsequent action research or quasi-experimental studies through theoretical integration, model construction and lesson design.

3.2 Design Basis

The analysis and design of this study are based on four types of materials.

First, curriculum standards and evaluation requirements. The requirements of the English Curriculum Standards for Senior High School (2017 edition, 2020 revision) concerning pragmatic knowledge, practical writing and written communication serve as the main policy basis, and common evaluation criteria for senior high school practical writing are consulted to clarify teaching objectives, genre requirements and evaluation dimensions [1].

Second, trial records of AI tools. The researchers trialed generative AI tools on functions such as reader card generation, graded model essay generation, chunk recommendation, format checking, register prompting, four-dimensional scoring and error archiving, recording their usability, limitations and instructional adaptability [16,17].

Third, teaching reflection and lesson materials. Drawing on regular teaching experience in Grade 10 practical writing, the researchers compiled students' common problems in format, content points, register, reader awareness and communicative effect, forming the practical basis for lesson design.

Fourth, existing literature and theoretical frameworks. By reviewing the cognitive process theory of writing, technology-enhanced language learning, self-efficacy theory and formative assessment theory, the study extracts design principles for AI-empowered writing instruction and constructs the "5A+E" mechanism model and the five-stage teaching pathway accordingly.

It should be noted that the above materials are used mainly for design argumentation and do not constitute empirical data. This study reports no changes in student achievement, no experimental-control group differences and no statistical test results.

3.3 Analysis and Design Procedure

The analysis and design procedure consists of three steps.

Step 1: Problem categorization. The main difficulties of Grade 10 practical writing are categorized into four types—mechanical format training, weak reader awareness, insufficient register control and delayed feedback—and mapped onto four theoretical levels: the cognitive process of writing, language learning mechanisms, motivation and affect, and evaluation feedback [2-4].

Step 2: mechanism construction. Based on the four theoretical perspectives, the key functions of AI empowerment are extracted to form five core dimensions—Analysis, Activation, Assistance, Assessment and Adaptation—with Ethics added as a cross-cutting safeguard dimension, constituting the "5A+E" mechanism model.

Step 3: Pathway design and lesson presentation. The mechanism model is transformed into a five-stage teaching pathway of "context trigger—element deconstruction—AI co-writing—multi-dimensional evaluation—reflective transfer", and a lesson on the invitation letter "Chinese Culture Festival" is used to present the matching of AI functions, teacher behaviors, student behaviors and evaluation evidence before, during and after class.

4. The "5A+E" Empowerment Mechanism Model

4.1 Model Proposal

Building on existing research [7-9], and in light of the genre features and instructional needs of Grade 10 practical writing, this study proposes the "5A+E" empowerment mechanism model. The model includes five core dimensions—Analysis, Activation, Assistance, Assessment and Adaptation—and one cross-cutting dimension, Ethics.

It should be clarified that the "5A+E" is not described here as a six-dimensional synergy but as five core links plus one ethical safeguard dimension. The five A's constitute the main line of the teaching process, while E runs throughout, ensuring that AI empowerment always serves the development of students' genuine writing ability rather than replacing student thinking.

4.2 The Six Dimensions

Analysis addresses the question of where the starting point lies. Grade 10 students differ in their weaknesses in practical writing: some have strong format awareness but weak register; some cover all content points but make many grammatical

errors; some have rich vocabulary but no reader awareness. Before class, AI can scan students' pre-test compositions, use dependency syntactic analysis and semantic slicing to categorize errors into format, content points, register and grammar, mark high-frequency errors by color depth, and generate interactive four-dimensional radar charts [15].Teachers thereby obtain a precise instructional starting point: students weak in format receive format self-check lists; students weak in register receive register contrastive exemplars; students omitting content points receive point-extraction training. Diagnosis is no longer based on experience alone but becomes a quantifiable, traceable and dialogic basis for instructional decision-making.

Activation addresses the question of why one writes. In traditional practical writing instructionion, task situations are often fixed and formulaic—the routine frame of "suppose you are Li Hua" is seriously detached from students' real communicative needs.AI can generate authentic communicative situations: a letter from a partner school in the UK, a reader card, a purpose card and a point card. Students clarify to whom they write, why, what and in what tone; the writing task is thus transformed from a paper hypothesis into real communication [13,16]. The reader card specifies not only the reader's identity, age, interests, known and unknown information, but also cultural background and communicative expectations, helping students develop awareness of writing for a reader.

Assistance addresses the question of how to write. Throughout the writing process, AI provides three types of scaffolding: input scaffolding, generating basic, adequate and excellent model essays for students to deconstruct format elements and register features; conceptual scaffolding, generating mind maps, point lists and logical frameworks to help students organize content; and expression scaffolding, pushing chunk recommendations, sentence upgrades and register prompts in real time to help students break through expression bottlenecks [12].The three types of scaffolding appear in waves: when AI detects that a student's format is basically correct, it automatically reduces format prompts and switches to register upgrading suggestions; when high-frequency errors cluster, it triggers a group diagnosis mode, packaging similar errors to the group screen, realizing a switch from individual to collective scaffolding.

Assessment addresses the question of how well one writes.AI scores compositions against four-dimensional rubrics of format standardization, content point coverage, language appropriateness and communicative effect, generating radar charts and gradient heat maps: the deeper the red, the more serious the digression or discontinuity; the deeper the green, the more prominent the advanced vocabulary and creative highlights. At the same time, a four-party consultative evaluation of "student—AI—peer—teacher" is launched: students first self-assess against AI comments, AI then adds follow-up questions based on self-assessment differences; peers circle highlights and blind spots on a shared screen; and teachers, based on the class error cloud map compiled by AI, identify the micro-skill targets for the next lesson. Diagnostic, formative and summative assessment converge here, and every AI score becomes the starting point of the next writing task.

Adaptation addresses the question of how to improve.AI automatically archives the errors of each composition by category, generates a personal error profile, and pushes targeted micro-lessons. Students complete a second writing in a changed situation, transferring the format awareness, reader awareness and register awareness learned this time to a new task.AI compares the four-dimensional scores of the two writings and generates growth curves, allowing students to see their progress directly. Reflection is no longer a vague "pay attention next time," but something concrete: "this type of error has decreased for two consecutive times" or "this ability has improved from adequate to excellent."

Ethics addresses the question of where the boundary lies.AI-empowered writing instruction must hold the bottom line of technological controllability, instructional accountability and ethical defensibility [17].Specific measures include: automatically adding watermarks to AI-generated content and recording revision trajectories to prevent plagiarism; a switch requiring teacher confirmation of AI suggestions to prevent misguidance; local storage of writing data without uploading to the public internet to protect privacy; and reserving AI-free independent writing time in every lesson to prevent dependence. The ethical dimension runs through the other five dimensions, ensuring that AI empowerment always serves the development of students' genuine writing ability rather than replacing their independent thinking.

4.3 Operational Logic of the Model

The operational logic of the "5A+E" model can be summarized as one data chain, two cycles and three safeguard circles.

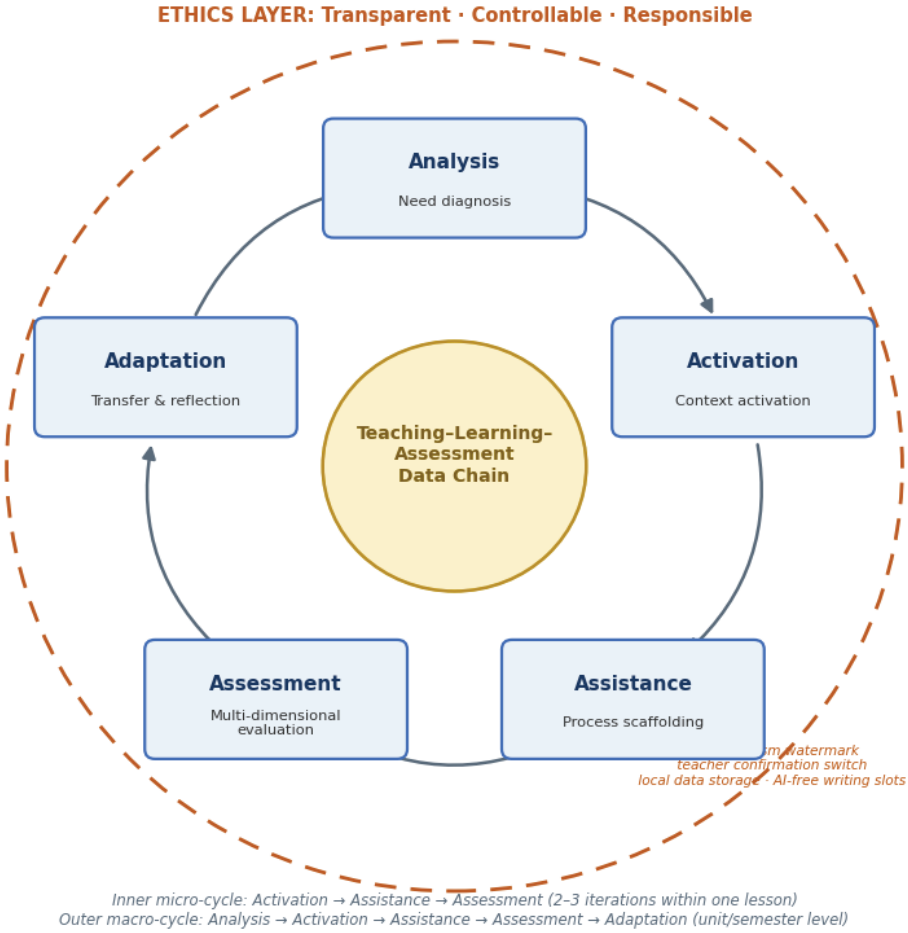
One data chain is the instructional starting-point data generated by Analysis, the task-understanding data generated by

Activation, the process-improvement data generated by Assistance, the evaluation-feedback data generated by Assessment, and the transfer-growth data generated by Adaptation all flow into the same "teaching-learning-assessment data chain". Teachers, students and AI are aligned in real time on this data chain, avoiding the separation of teaching from assessment and of learning from assessment.

Two cycles is the first is the in-class micro-cycle, in which "Activation-Assistance-Assessment" iterates at high frequency within a single lesson. After entering the situation, students receive AI scaffolding, complete a draft, receive instant AI evaluation, revise according to feedback, and receive AI re-diagnosis; this cycle can occur two to three times within a 40-minute lesson. The second is the post-class macro-cycle, in which "Analysis-Activation-Assistance-Assessment - Adaptation" operates at the unit or semester level. AI compares data from students' multiple writings to generate growth curves; teachers adjust the teaching focus of the next unit accordingly, and students formulate personal writing improvement plans.

Three safeguard circles is the innermost is the technological safeguard, ensuring the stable operation of AI tools and the secure storage of data; the middle is the instructional safeguard, ensuring that AI suggestions are consistent with teaching objectives and aligned with curriculum standards; the outermost is the ethical safeguard, ensuring that AI use does not infringe on privacy, replace thinking or create dependence. The three safeguard circles are led by the Ethics dimension and jointly constitute the safe boundary of AI-empowered practical writing instruction.

Figure 2. The "5A+E" empowerment mechanism model



5. Five-Stage Teaching Pathway Design

5.1 A "Three-Line Parallel" Pathway Framework

AI-empowered practical writing instruction is not a simple superposition of tools; it requires the teacher line, the student line and the AI line to operate in coordination on the same data chain. The teacher line is responsible for objective design, task design, model essay deconstruction, process guidance, high-level commentary and micro-lesson design; the student line for

pre-test writing, situation experiencing, element annotation, draft writing, peer review and revision, and second writing; the AI line for learning-status diagnosis, reader card generation, graded model essays, real-time scaffolding, intelligent scoring and error archiving. The three lines are connected through the shared data chain, realizing the core logic of the integration of teaching, learning and assessment.

Table 2. The "three-line parallel" pathway framework

Teacher line	Student line	AI line	Shared data chain
Objective design: aligning with curriculum standards and clarifying practical writing elements	Pre-test writing: completing a practicall writing draft	Learning-status diagnosis: generating an error cloud map	Instructional starting-point data
Task design: creating authentic communicative situations	Situation experiencing: clarifying reader, purpose and points	Reader card generation: generating reader and purpose cards	Task-understanding data
Model essay deconstruction: guiding deconstruction of format and register	Element annotation: annotating format, register and points	Graded model essays: generating three-level model essays	Element-cognition data
Process guidance: circulating and giving high-level guidance	Draft writing: listing points, writing and revising drafts	Real-time scaffolding: chunk recommendation, format checking, register prompts	Process-improvement data
High-level commentary: organizing peer review, focusing on communicative effect	Peer review and revision: self-assessment, peer assessment, revision	Intelligent scoring: four-dimensional radar charts	Evaluation-feedback data
Micro-lesson design: designing new situations	Second writing: transferring to a new task	Error archiving: personal error profiles and micro-lesson pushing	Transfer-growth data

5.2 The Five-Stage Teaching Process

Stage 1: Context trigger. The teacher designs an authentic communicative task; AI generates reader cards, purpose cards and authentic letters; students clarify to whom they write, why and what. The core objective is to activate reader awareness. In traditional writing tasks, students face a virtual instruction such as "suppose you are Li Hua," and the reader is a vague pen pal. The reader card generated by AI specifies the reader's identity, age, interests, known and unknown information, so that students have a concrete communicative partner in mind while writing.

Stage 2: Element deconstruction.AI generates three model essays at basic, adequate and excellent levels; the teacher guides students to deconstruct the salutation, opening, body, closing and signature block, while AI assists in annotating format elements and register features. The core objective is to establish genre awareness. The contrast among the three versions enables students to see directly that the gap between adequate and excellent lies not in vocabulary difficulty but in the strength of reader awareness and the precision of register control.

Stage 3: AI co-writing. Students list points and write drafts; AI provides real-time chunk recommendations, format checking and register upgrading prompts; the teacher circulates and only gives high-level guidance. The core objective is to realize personalized process scaffolding.AI scaffolding appears in waves: when a student's format is detected to be basically correct, format prompts are automatically reduced and register upgrading suggestions are pushed instead; when high-frequency errors cluster, group diagnosis mode is triggered, packaging similar errors to the group screen, realizing a switch from individual to collective scaffolding.

Stage 4: Multi-dimensional evaluation.AI scores against four dimensions—format standardization, content point coverage, language appropriateness and communicative effect—and generates radar charts; peer assessment focuses on reader awareness; the teacher gives high-level commentary on the cross-cultural communicative dimension. The core objective is to promote learning through assessment.AI scoring is not an end point but the starting point of the next revision; peer assessment is not simple error correction but a simulation of the reader's perspective; teacher commentary is not sentence-by-

sentence correction but high-level guidance on communicative strategies.

Stage 5: Reflective transfer.AI generates a personal error profile, archives errors by category and pushes targeted micro-lessons; students complete a second writing in a changed situation. The core objective is to form a growth loop for writing.AI compares the four-dimensional scores of the two writings and generates growth curves, allowing students to see their progress directly. Reflection is no longer a vague "pay attention next time" but something concrete: "this type of error has decreased for two consecutive times" or "this ability has improved from adequate to excellent."

Table 3. The five-stage teaching process and evaluation evidence

Stage	AI functions	Teacher behaviors	Student behaviors	Evaluation evidence
Context trigger	Generating reader cards, purpose cards and authentic letters	Designing authentic communicative tasks	Clarifying to whom and why to write	Task-understanding sheet
Element deconstruction	Generating three-level graded model essays	Guiding deconstruction of format, points and register	Annotating salutation, opening, body, closing and signature	Model essay deconstruction chart
AI co-writing	Chunk recommendation, format checking, register prompts	Circulating; high-level guidance	Listing points; writing and revising drafts	Draft + revision trajectory
Multi-dimensional evaluation	AI four-dimensional scoring; radar charts	Organizing peer review; high-level commentary	Self-assessment, peer assessment, revision	Evaluation rubric + radar chart
Reflective transfer	Error profile, micro-lessons, second writing	Designing new situations	Second writing; transferring to a new task	Error profile; growth curve

5.3 Matching AI Functions to Pre-Class, In-Class and Post-Class Stages

Table 4. Matching AI functions to instructional stages

Instructional stage	Core AI functions	Teacher behaviors	Student behaviors	Evaluation evidence
Pre-class	Scanning pre-test compositions; generating four-dimensional error cloud maps of format, points, register and grammar	Analyzing diagnostic reports; determining the instructional starting point	Completing pre-test writing	Error cloud map
In-class	Generating reader cards, graded model essays, chunk recommendations, format checks, register prompts and four-dimensional scoring	Designing tasks; organizing peer review; high-level commentary	Situation experiencing; element annotation; draft writing; peer review and revision	Task-understanding sheet; deconstruction chart; drafts; revision trajectories; radar charts
Post-class	Generating personal error profiles; pushing micro-lessons; comparing two writings to generate growth curves	Designing new situations; individual guidance	Second writing; transferring to new tasks	Error profile; growth curve

6. Lesson Design: The Invitation Letter "Chinese Culture Festival"

6.1 Task Design

Suppose you are a Grade 10 student in a senior high school. Write an invitation letter to a Grade 10 student of a partner school in the UK, inviting him or her to your school's "Chinese Culture Festival." Requirements: 80–100 words; standardized format; complete content points; appropriate register. This study uses ChatGPT as an example; in actual teaching, any compliant generative AI tool can be selected to generate reader cards, model essays, chunks and scoring feedback.

6.2 Implementation Process

Phase 1: Context trigger.

AI operation: Please generate a letter from a British Grade 10 student to a Chinese student, asking about the Chinese Culture Festival, in a friendly and curious tone, about 80 words.

Letter generated by AI:

Dear friend,

I heard your school is holding a Chinese Culture Festival. I'm really curious about it! Could you tell me more? What activities will you have? I'd love to learn about Chinese culture.

Best wishes,

Lily

AI simultaneously generates a reader card:

Table 5. Sample reader card

Reader information	Content
Identity	A British Grade 10 student, 16 years old
Interests	Interested in Chinese culture, but knows little about it
Known information	Knows that China has a culture festival, but not the specific activities
Unknown information	Time, venue, activities, ways of participation
Communicative needs	Hopes to receive a clear, friendly and attractive invitationon

The teacher guides students to analyze "what does Lily want to know"，"what is the purpose of our letter" and "what tone should we use". Students clarify the reader, purpose and points of the writing and complete the task-understanding sheet.

Phase 2: Element deconstruction.

AI operation: Please generate three invitation letter samples: a basic version of 50 words with basically correct format but overly formal register; an adequate version of 80 words with standardized format and appropriate register; and an excellent version of 100 words with standardized format, appropriate register, vivid cultural explanation and strong reader awareness. The theme is inviting a British friend to the Chinese Culture Festival. After AI generates the three versions, the teacher guides students to complete a model essay deconstruction chart:

Table 6. Comparison of elements across the three model essays

Element	Basic version	Adequate version	Excellent version
Salutation	Dear Lily,	Dear Lily,	Dear Lily,
Opening	I invite you to…	I'm writing to invite you to…	I'm delighted to invite you to…
Body	Time, venue	Time, venue, activities	Time, venue, activities, cultural explanation
Closing	Please come.	I would appreciate it if you could reply by…	I would be delighted if you could join us…
Signature	Yours, Li Hua	Yours sincerely, Li Hua	Yours sincerely, Li Hua

AI format check: AI automatically annotates the completeness of format elements in the three model essays, using colors to distinguish required elements (salutation, opening, body, closing, signature) from optional elements (cultural background supplements, emotional expression).

The teacher guides students to compare the differences in reader awareness across the three versions—the basic version "Please come" sounds blunt, while the excellent version "I would be delighted if you could join us" conveys politeness and expectation. The teacher further asks: why does the excellent version add cultural explanation? Because the reader Lily is interested in Chinese culture but knows little about it, adding background information such as "the Dragon Boat Festival commemorates Qu Yuan" and "dragon boats symbolize unity" helps the reader understand the significance of the activities and enhances the appeal of the invitation.

Phase 3: AI co-writing.

Based on the reader card and the deconstruction chart, students list a point outline (e.g., time, venue, activities, expectations) and begin writing their drafts.

Real-time AI scaffolding operations:

(1) Chunk recommendation: the student enters the key words "culture festival, invitation, activities", and AI instantly pushes frequently used invitation letter sentence patterns: I'm writing to invite you to… The festival will be held on… in… We have prepared various activities, including… I would appreciate it if you could reply by…

(2) Register prompt: when the student writes "You must come to our festival", the AI pops up a prompt: "'You must come' is overly direct in register; consider 'I would be delighted if you could come' or 'It would be great if you could join us'. An invitation letter should convey politeness and respect and avoid imperative expressions."

(3) Format check: AI automatically detects whether the salutation, signature and paragraphing are complete.

(4) Content point coverage check: AI compares the unknown-information list on the reader card and prompts whether key points are missing, such as the reply method and the names of specific activities.

The teacher circulates in the classroom and only gives guidance on high-level questions, such as "Is the cultural explanation sufficient?" and "Can the reader understand the background of the Dragon Boat Festival?". The teacher does not correct grammatical errors sentence by sentence, but guides students to dialogue with AI and independently decide whether to accept a revision.

Revision trajectory recording: AI automatically records every revision, forming an upgrade trajectory for subsequent reflection.

Table 7. Sample revision trajectory

Original sentence	Revised sentence	Reason for revision
You must come to our festival.	I would be delighted if you could come.	Overly direct register; revised into a polite invitation
We have zongzi.	We have prepared zongzi, a traditional Chinese food made of rice and bamboo leaves.	Cultural explanation added to help the reader understand
Please reply.	I would appreciate it if you could reply by June 1st.	Reply method and time specified to enhance communicative effect

Phase 4: Multi-dimensional evaluation.

AI four-dimensional scoring: AI scores students' drafts against the following rubric and generates radar charts.

Table 8. Four-dimensional evaluation rubric for practical writing

Dimension	Excellent (4)	Adequate (3)	Needs improvement (2)
Format standardization	Salutation, opening, body, closing and signature all correct; clear paragraphing	Format basically correct; individual elements incomplete	Format missing or chaotic
Content point coverage	All points naturally integrated; complete and logical information	Points basically covered; individual information missing	Key points missing; information incomplete
Language appropriateness	Appropriate register; idiomatic expression; no grammatical errors	Register basically appropriate; few grammatical errors	Inappropriate register; many grammatical errors
Communicative effect	Strong reader awareness; clear purpose; appealing	Purpose basically clear; average reader awareness	Vague purpose; lacking reader awareness

Peer assessment: students exchange compositions in pairs and circle the highlights and blind spots of each other's drafts in terms of reader awareness. AI counts high-frequency commendable expressions and disputed sentences.

Teacher's high-level commentary: the teacher focuses on the cross-cultural communicative dimension. For example:

Student A writes in introducing the Dragon Boat Festival: 'We eat zongzi to remember Qu Yuan', which is good; but if a sentence such as 'Qu Yuan was a patriotic poet who lived over 2,000 years ago' is added, British readers will understand more easily. The sufficiency of cultural explanation is an important manifestation of reader awareness in practical writing."

Phase 5: Reflective transfer.

AI error profile generation: AI automatically archives the errors of each student's composition by category.

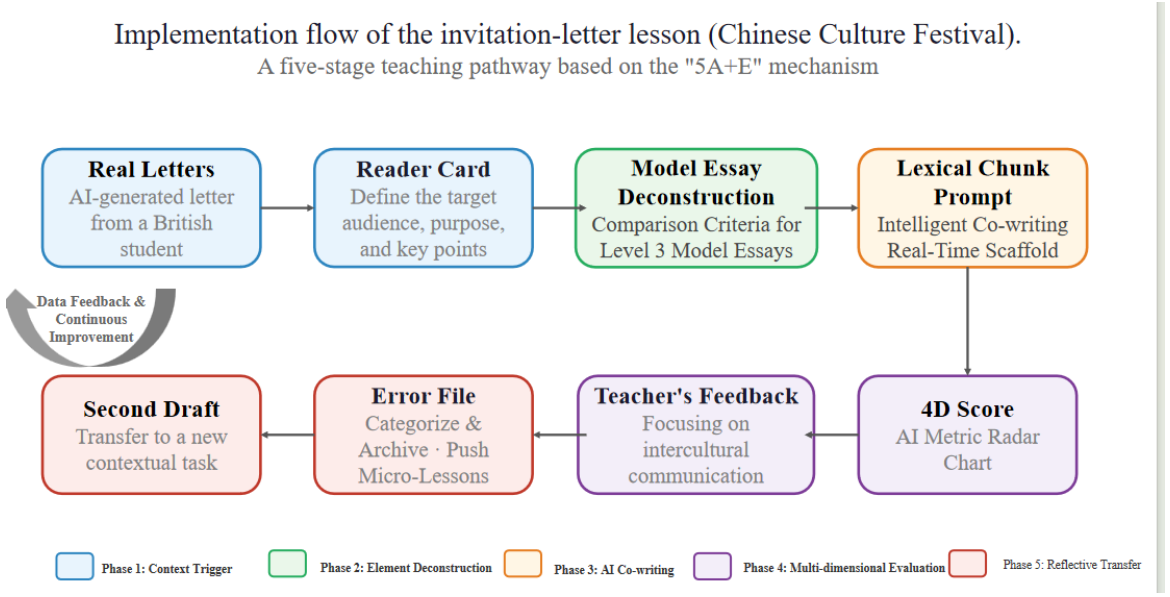
Table 9. Sample error profile

Error type	Specific manifestation	Frequency
Format errors	Misplaced signature; missing salutation	2
Inappropriate register	"You must come"	1
Preposition errors	"on the festival" should be "at the festival"	1
Missing content points	Reply method not mentioned	1

According to error types, AI pushes three targeted micro-lessons: a detailed explanation of invitation letter format elements; strategies for register selection in practical writing; and common errors in preposition collocation.

Second writing: students write a letter of suggestion in a changed situation, such as "making three suggestions to the school library," transferring the format awareness, reader awareness and register awareness learned in this lesson to a new task.

Figure 3. Implementation flow of the invitation letter lesson



7. Conclusion and Discussion

7.1 Main Conclusions and the Value of the Model

This study has constructed a "5A+E" empowerment mechanism model for AI-empowered practical writing instruction in Grade 10 English, positioning AI as a reader analyst, format validator, point generator, register regulator and evaluation embedder [7,9]. The model comprises six dimensions—Analysis, Activation, Assistance, Assessment, Adaptation and Ethics—and operates through one data chain, two cycles and three safeguard circles. On this basis, a five-stage teaching pathway of "context trigger—element deconstruction—AI co-writing—multi-dimensional evaluation—reflective transfer" is proposed, and a lesson on the invitation letter "Chinese Culture Festival" is used to present the complete design process.

The core value of AI empowerment in practical writing lies not in replacing teachers, but in pushing practical writing instruction from template drilling toward authentic communication through authentic situation generation, personalized process scaffolding and multi-dimensional evaluation feedback.AI can undertake part of the repetitive, diagnostic and scaffolding work, but teachers' guidance on communicative strategies, value judgement and ethical gate-keeping remain irreplaceable. The lesson design shows that the model and pathway are operable to a certain extent, but it does not prove their

instructional effects. Whether the model can improve students' writing performance, strengthen reader awareness and improve register control still needs to be tested with real classroom data.

7.2 Practical Challenges, Boundaries and Countermeasures

AI-empowered practical writing instruction faces three practical challenges. First, the risk of technology misuse: students may directly copy AI-generated content, resulting in writing distortion and no genuine improvement in writing ability.AI-generated model essays are idiomatic and well-structured; if students copy them directly, they not only violate academic integrity but also lose the value of writing training. Second, blurred ethical boundaries: AI data collection and privacy boundaries are unclear, and students' writing data face the risk of leakage.AI tools need access to students' composition texts to generate feedback; these texts may contain personal information, and improper storage or transmission may infringe privacy. Third, instructional resistance: some teachers resist technological intervention, and the digital competence gap constrains deep classroom application. Some teachers worry that AI will replace their role, some are unfamiliar with prompt design, and some doubt the accuracy of AI feedback.

In response to these challenges, this study proposes the following countermeasures. First, anti-plagiarism: automatically add watermarks to AI-generated content and record revision trajectories, while guiding students to treat AI model essays as objects of deconstruction rather than imitation. Second, anti-dependence: reserve AI-free independent writing time in every lesson to safeguard the development of students' independent writing ability. Third, competence development: regularly organize AI literacy workshops for teachers to improve prompt design and feedback interpretation skills [17].

It should be noted that the "5A+E" model and the five-stage pathway proposed in this study apply mainly to practical writing instruction in senior high school English, especially at the Grade 10 level. Their applicability is subject to the following conditions: teachers need basic AI tool-using and prompt-design abilities; schools need to provide a stable technical environment and data security guarantees; the output quality of AI tools fluctuates, and teachers need the ability to review and adjust; the model does not apply to fully replacing teacher instruction, nor to high-stakes examination scoring. Future research should adapt the model according to different school conditions, student levels and AI tool versions.

7.3 Limitations and Future Directions

This study is a theoretical construction and lesson design study and has not yet been empirically tested. The lesson design is based on AI tool trial records and teaching reflection, lacking support from large-scale student data. The selection of AI tools, the design of prompts and the effects of classroom implementation all need to be further verified in real teaching situations. In addition, the literature review and international scholarly dialogue of this study remain insufficient; more English empirical studies should be added in follow-up work to strengthen the international dialogue of the theoretical framework.

Future studies can conduct 8–16-week action research in two parallel Grade 10 classes, using the practical writing scoring criteria of the national college entrance examination, a writing self-efficacy scale and student interviews as instruments to test the actual effects of the "5A+E" model and the five-stage pathway. Specific questions worth exploring include: Does AI scaffolding affect students of different levels differently? How do AI feedback and teacher feedback coordinate? Does students' independent writing ability improve after using AI? How do teachers' workload and roles change in the process of using AI? How can the balance be struck among data security, academic integrity and instructional innovation? Answers to these questions will further refine the theory and practice of AI-empowered practical writing in senior high school English.

The "5A+E" model and the five-stage teaching pathway represent a theoretical exploration and lesson design attempt at AI-empowered practical writing in senior high school English. Their value does not lie in providing a fixed operating procedure, but in providing front-line teachers with an adjustable framework for understanding, using and reflecting on AI. Future research should test the framework in real classrooms and revise it continuously according to student levels, school conditions and the development of AI tools, so that AI truly serves the development of students' genuine writing ability rather than becoming a new technological burden.

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